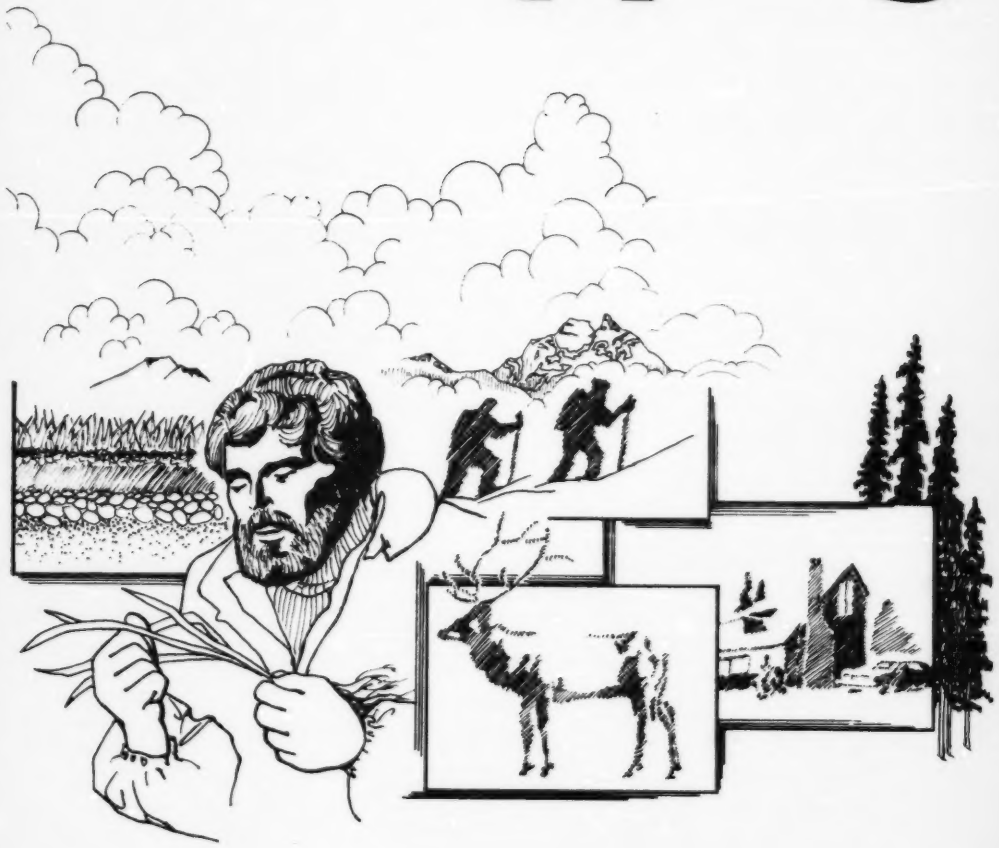
Resource Mapping



Province of British Columbia
Ministry of Environment
ISBN 0 7719 8617 3

Canadian Catalouguing in Publication Data
Reid, R. H. (Robert Hugh), 1947-
Resource mapping

Bibliography: p.
ISBN 0-7719-8617-3

1. Natural resources - British Columbia - Maps.
2. British Columbia - Economic conditions - 1945- - Maps.* I. British Columbia. Ministry of Environment. Assessment and Planning Division. II. Title.

G3511.G3R44 912'.13337'09711 C81-092217-7

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First Printing 1981.

Design & Layout
TERRESTRIAL STUDIES BRANCH

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Introduction

This publication is intended to give a brief description of each type of thematic map produced by the Assessment and Planning Division of the Ministry of Environment. Detailed index maps are shown in a Division Catalogue which specifies the coverage of each theme, and lists classification manuals and supporting publications.

All resource maps are prepared by the Terrestrial Studies Branch, Air Studies Branch and Aquatic Studies Branch. The mapping components of these three Branches were formerly within the Resource Analysis Branch. The Resource Analysis Branch arose from the British Columbia Land Inventory program.

The Assessment and Planning Division Catalogue may be obtained from:

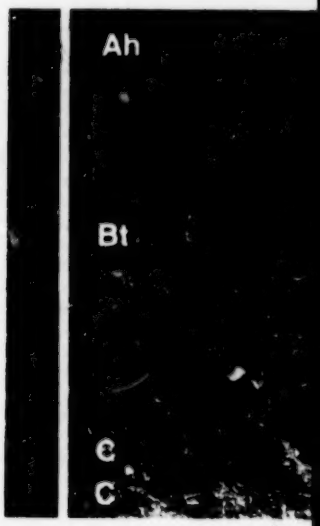
Map Library
Assessment and Planning Division
B.C. Ministry of Environment
Parliament Buildings
Victoria, B.C.
V8V 1X5

The Map Library is located at 765 Broughton St., Victoria, B.C. (Telephone: 387-6995).

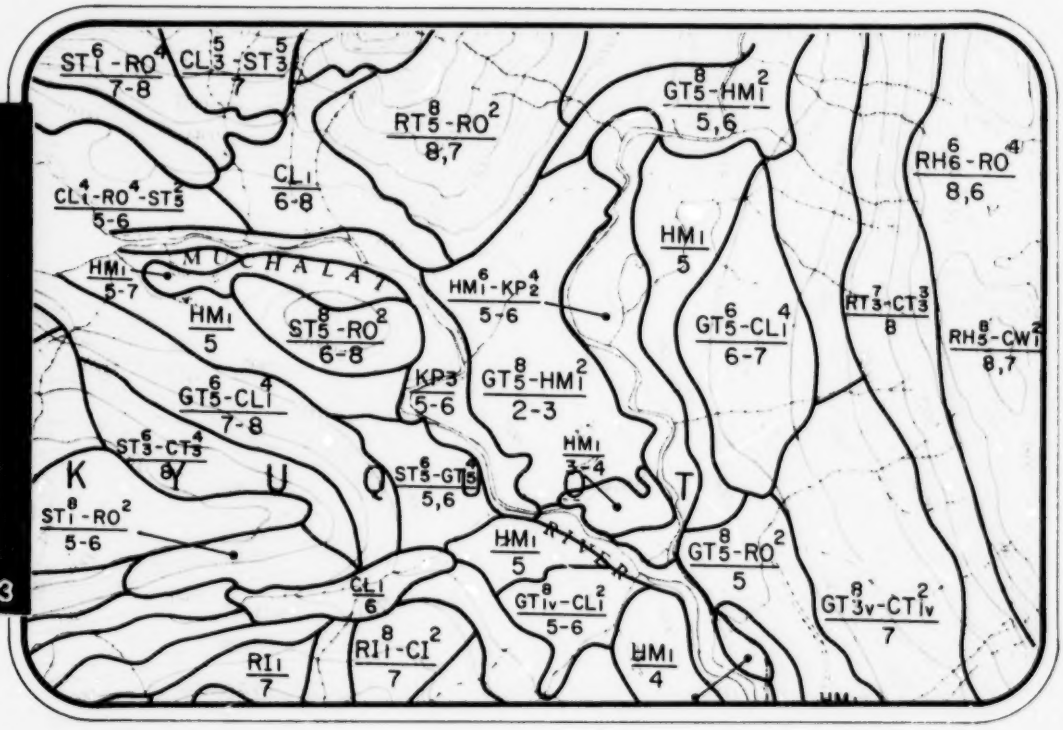
Baseline Resource Maps

Baseline resource maps portray actual information collected through various inventory activities. They include soil, terrain, vegetation, climate and aquatic biophysical mapping. From this baseline information, other maps such as agriculture capability, settlement suitability and geological hazards can be determined.

Baseline maps and others produced from these are used for planning, development and protection of our resources. Information presented is defined or described in legends, classification manuals, data files and reports.



Soil

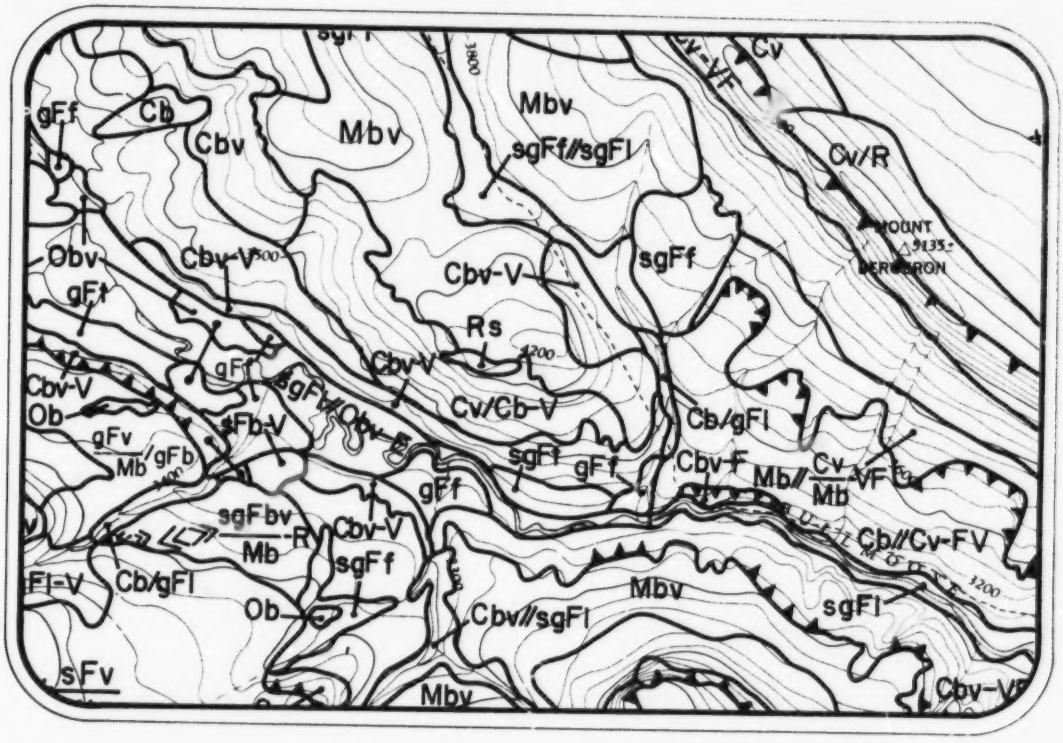


A soil map provides information on parent material, soil drainage, soil profile development, texture, slope, associated vegetation, and other related soil data. Some older soil maps also contain terrain or landform information.

Soil maps are used for land use planning, providing the basis for such derivative maps as soil drainage, depth to bedrock, slope and texture. Interpretive maps identifying erosion hazards, flooding hazards or settlement suitabilities can be produced. They may also be used for predicting management requirements including crop selection, fertilizer needs or salinity problems.

Soil maps are available for much of the province.

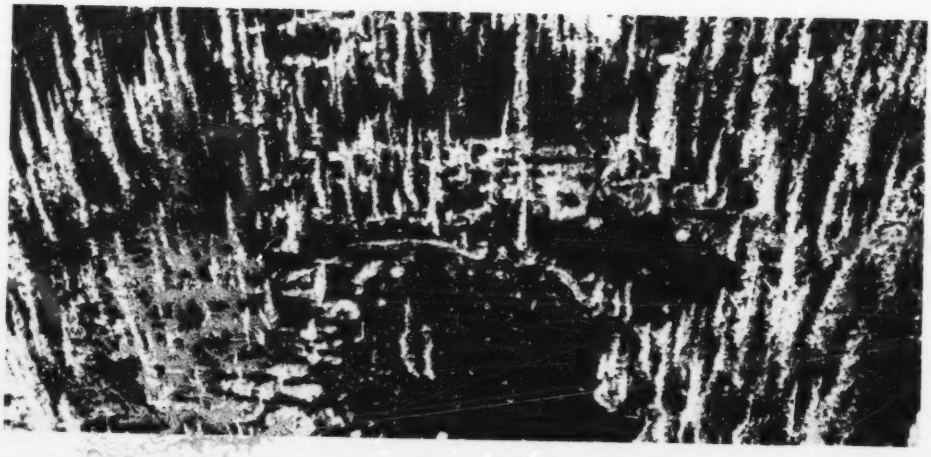
Terrain



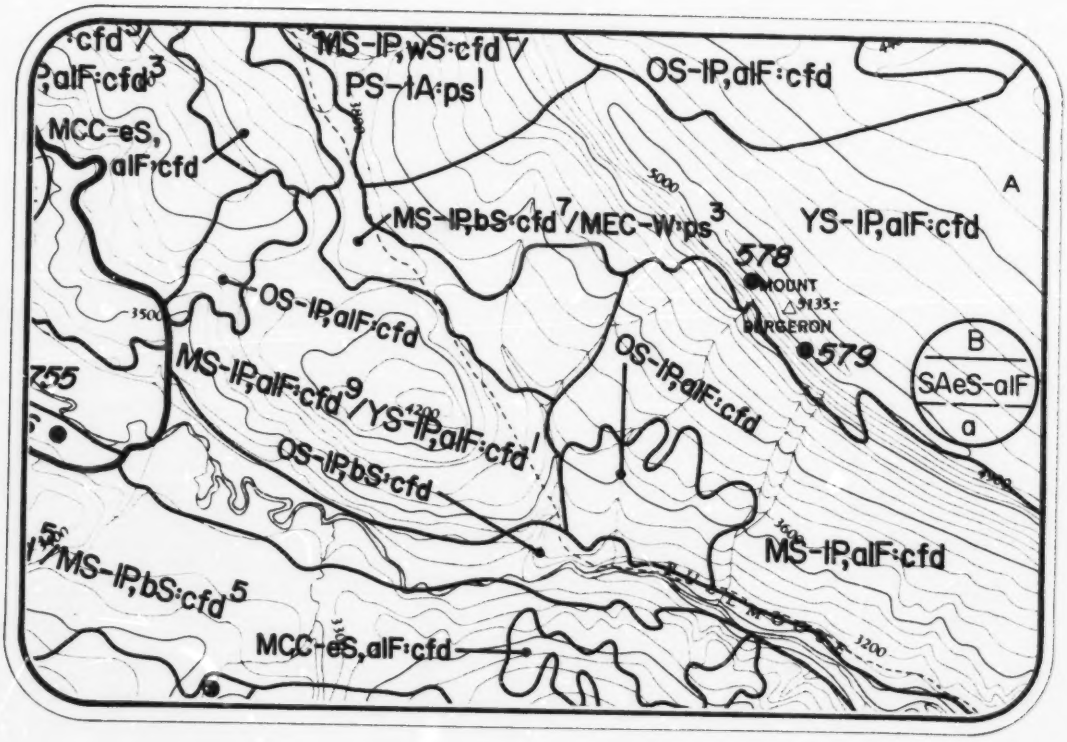
Terrain maps show the distribution of surficial materials, their texture, surface expression, and geological processes.

They are used in the production of soils maps and other derivative and interpretive maps such as geological hazards, settlement suitability or potential sources of sand and gravel.

Terrain maps are available for much of the province. Older mapping has some terrain information combined on the soil map (soil and landform).



Vegetation

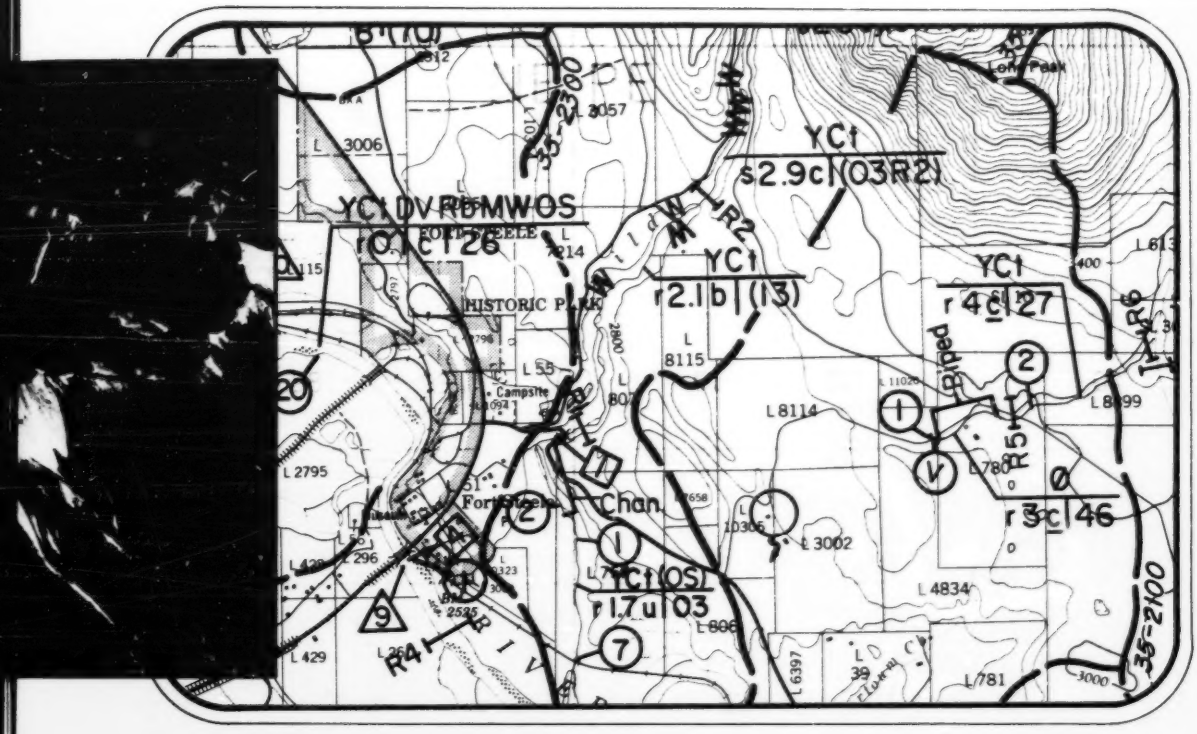


Vegetation maps provide information on the distribution of plants and plant ecology. Forest zonation maps show Forest Regions, Sections, Zones and Subzones. These units represent broad climatic influences as reflected in vegetation. Also, the maps usually show information on vegetation units or vegetation types. These maps give more specific information on the ecology of present vegetation and on plant succession.

Vegetation maps provide necessary biological information for determining management alternatives, constraints, use and productivity.

Generalized vegetation maps are available for much of the province. Detailed maps are available for selected areas only.

Aquatic Biophysical



Aquatic Biophysical maps show information on physical channel and valley characteristics, substrate (bed) materials, aquatic and bank vegetation, hydraulics, and fish species presence and life history. Watershed boundaries are also delineated on the maps.

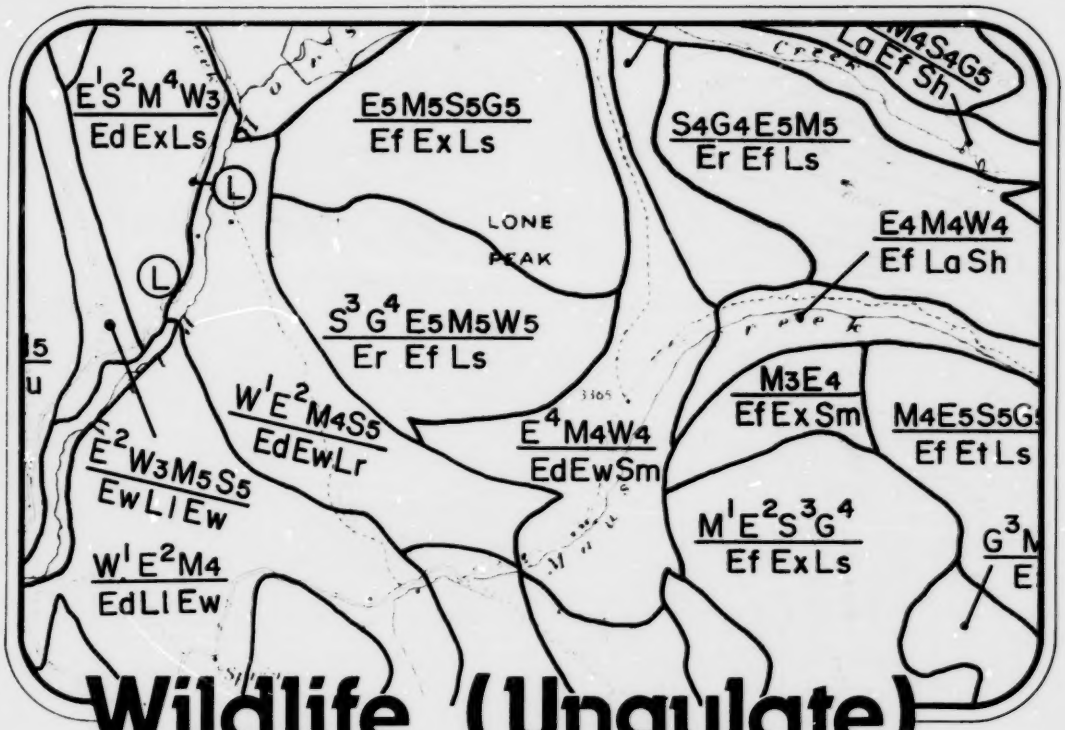
Aquatic Biophysical maps form a necessary input towards determining management alternatives, constraints, use, and productivity.

These maps are available for much of the province. More detailed special studies and maps addressing specific fishery management problems are also produced.

Other Resource Maps

A number of other resource maps are available from the Assessment and Planning Division. These resource maps are mainly incorporated into folios for special projects. Themes vary with the nature of the request by the initiating agency.

Certain inventories such as Present Land Use and Climate provide supplemental data for resources not published by the Canada Land Inventory program. Others such as Wildlife Biophysical and Lake Inventory offer additional data to assist managers with resource problems.

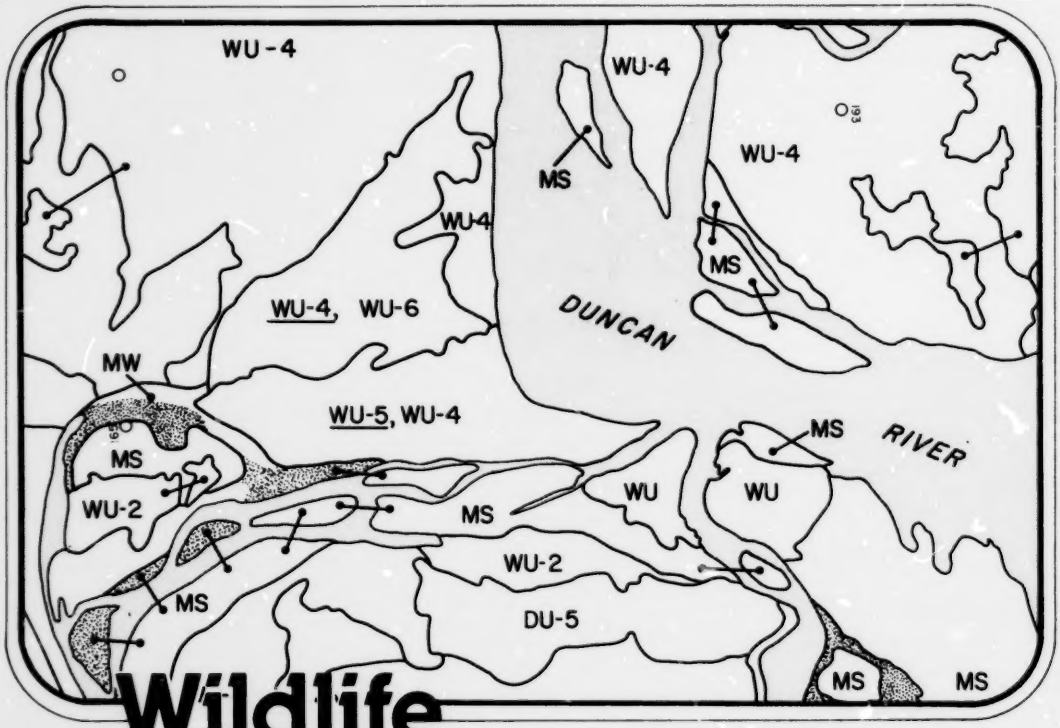


Wildlife (Ungulate) Biophysical Capability

Wildlife (Ungulate) Biophysical Capability maps show the ability of the land to support ungulate species over the long term. The map units are based on geology, landform, soil, vegetation, climate, and the ecological preferences of ungulate species.

Wildlife (Ungulate) Biophysical maps are used alone and in resource folios to identify important wildlife areas and as an aid to developing land management plans for wildlife.

These maps are available for the East Kootenays, northeastern B.C. and the Bulkley Valley.

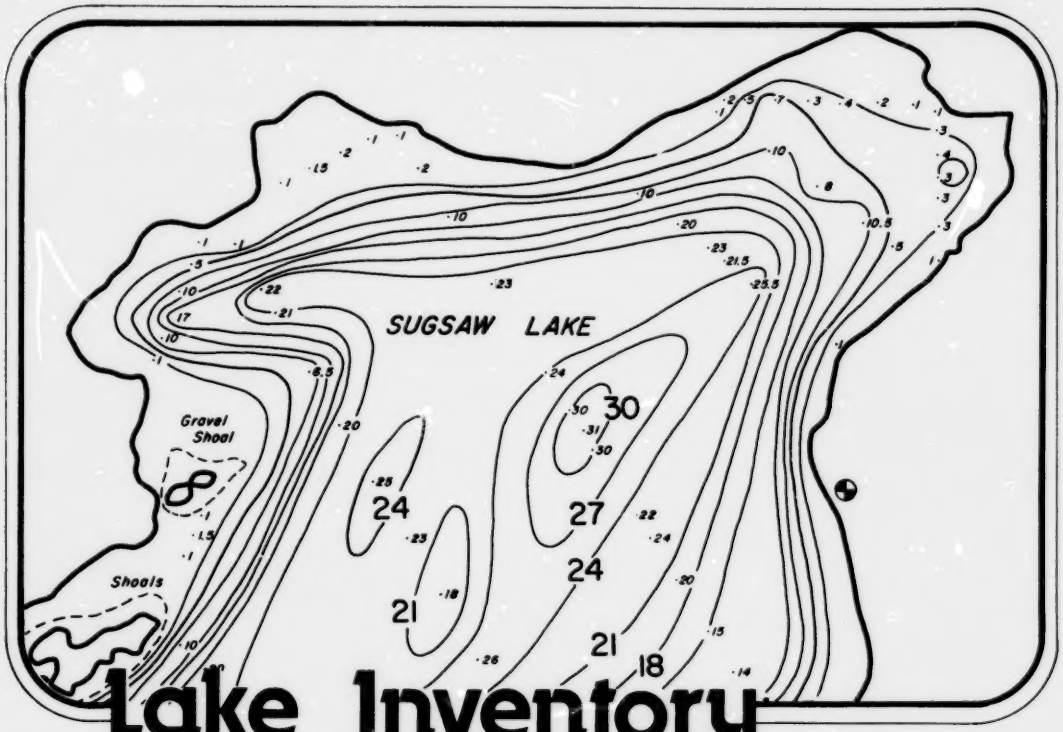


Wildlife Biophysical Habitat

Biophysical habitat maps are relatively detailed maps that delineate habitat units primarily on the basis of vegetation and substrate differences. Two main types of these maps are presently produced: 1) Wildlife (Ungulate) winter range habitat maps; and 2) Estuary wetland habitat maps.

Biophysical habitat maps provide a framework for evaluating wildlife ranges and provide habitat use constraints and potentials to help in the development and selection of land management alternatives.

This mapping program is relatively new and maps are presently available for only a select number of wildlife concentration areas in the interior of the province and for a limited number of coastal wetland areas.



Lake Inventory

Lake surveys have been conducted primarily for fisheries management purposes. Lake reports include physical data such as bathymetric mapping, inflow/outflow details, plus biological and basic water chemistry parameter measurements.

The bathymetric maps are at various scales which have been determined by the shape and size of the lake and by the intended end use of the survey data by the requestor. Area, total volume, mean depth, maximum depth, and bench mark locations are included.

All sheets currently produced are in metric form.

Coastal Zones

Coastal zone inventory maps delineate homogeneous physical units of the shoreline. Each unit represents a summary of the shorezone characteristics of the supratidal, intertidal and subtidal zone within each unit. Characteristics described include dimensions, texture and morphology, and process (e.g. tides and currents).

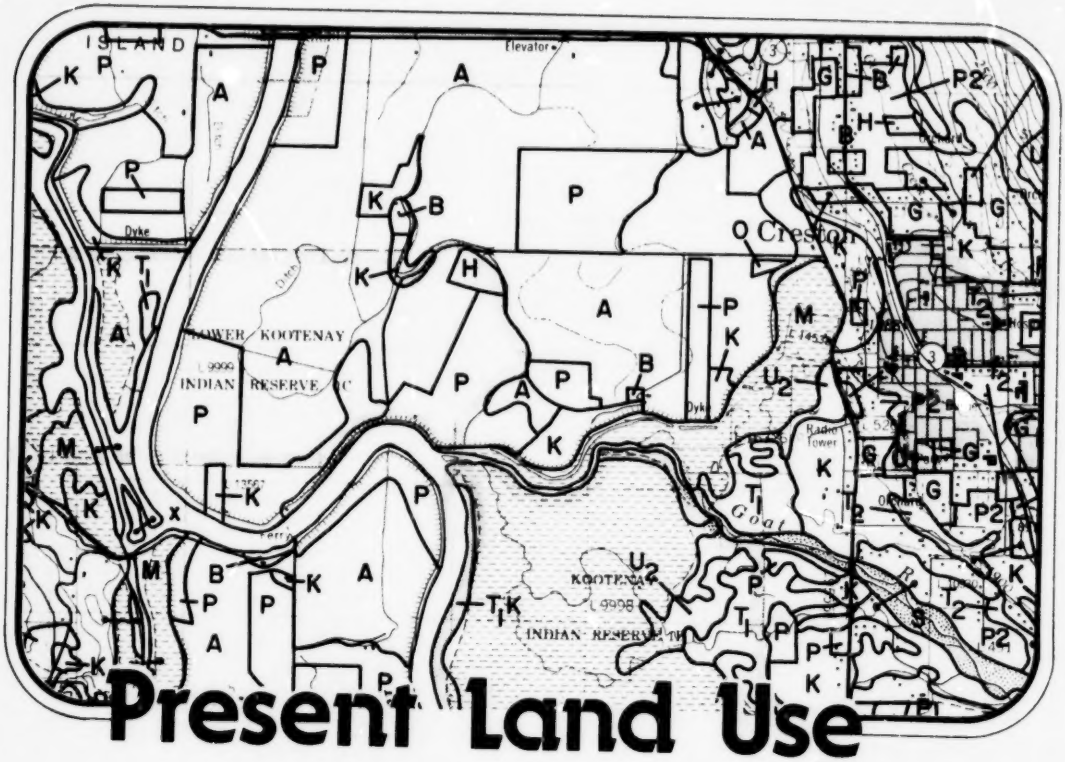
They are used as a guide for land use planning, including the identification of sensitive areas of rapid shoreline change, potential oil spill impact, recreation and granular resource potential, and preliminary engineering design.

Coastal zone inventory is a relatively new mapping program; areas presently covered include the Saanich Peninsula and parts of the Gulf Islands.

Circa 1910

1981

Photos taken looking west from Mt. Tolmie.



Present Land Use

Present Land Use maps show the location and extent of major land uses categorized by a sixteen class rating system showing cropland, forested areas, open grassland, etc.

Present Land Use maps are used to compare present use with potential use shown on the capability maps. They quickly become dated and should be used in conjunction with recent air photographs.

Present Land Use maps are available for the entire province excluding a section for the central coast and northwestern B.C.

Capability Maps

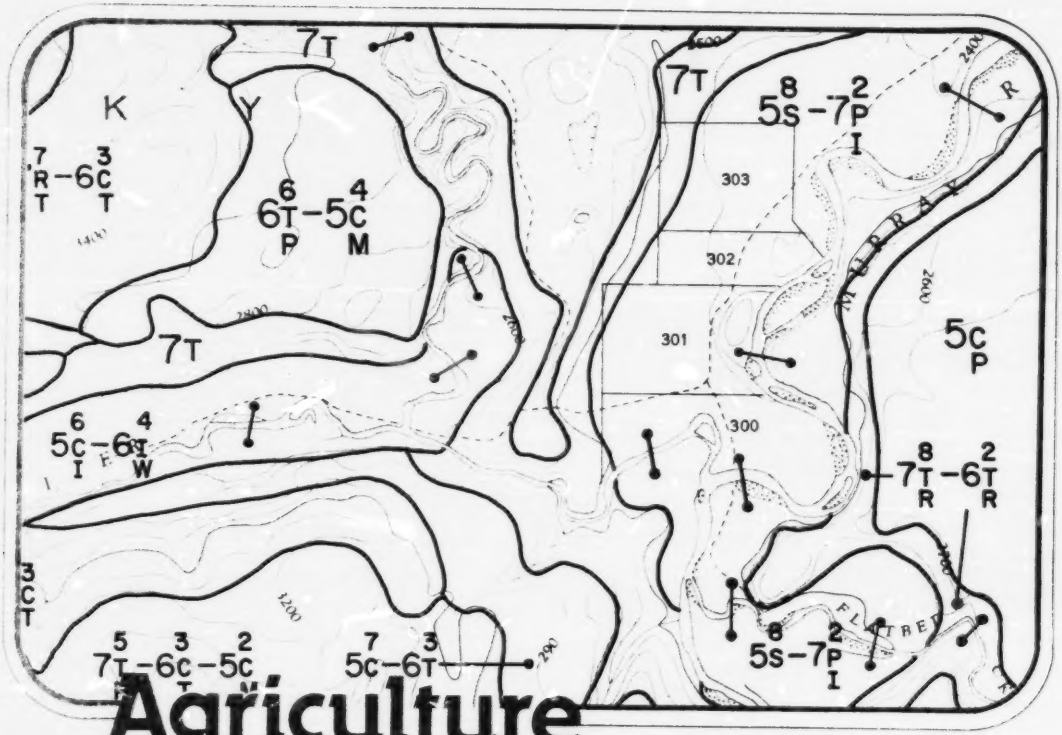
Capability maps were initially produced under the Canada Land Inventory (C.L.I.) program. The five C.L.I. sectors included agriculture, forestry, recreation, ungulates and waterfowl.

The objective of the program was to survey and classify the lands according to their inherent capability for supporting any of the above five uses.

In all cases a seven class rating system is used ranging from very high capability (Class 1) to no capability (Class 7). Subclasses are also shown which specify the degree of limitation for agriculture, forestry, ungulates and waterfowl, and kinds of features which provide an opportunity for recreation.

Capability maps are generally based on soil, climate, and terrain inventories with additional information included as required (e.g. tree productivity measurements, wildlife and waterfowl census). Capability ratings are still being applied in many land use planning projects.

Small scale generalized maps are also available in published form for all of the mapped area in British Columbia.

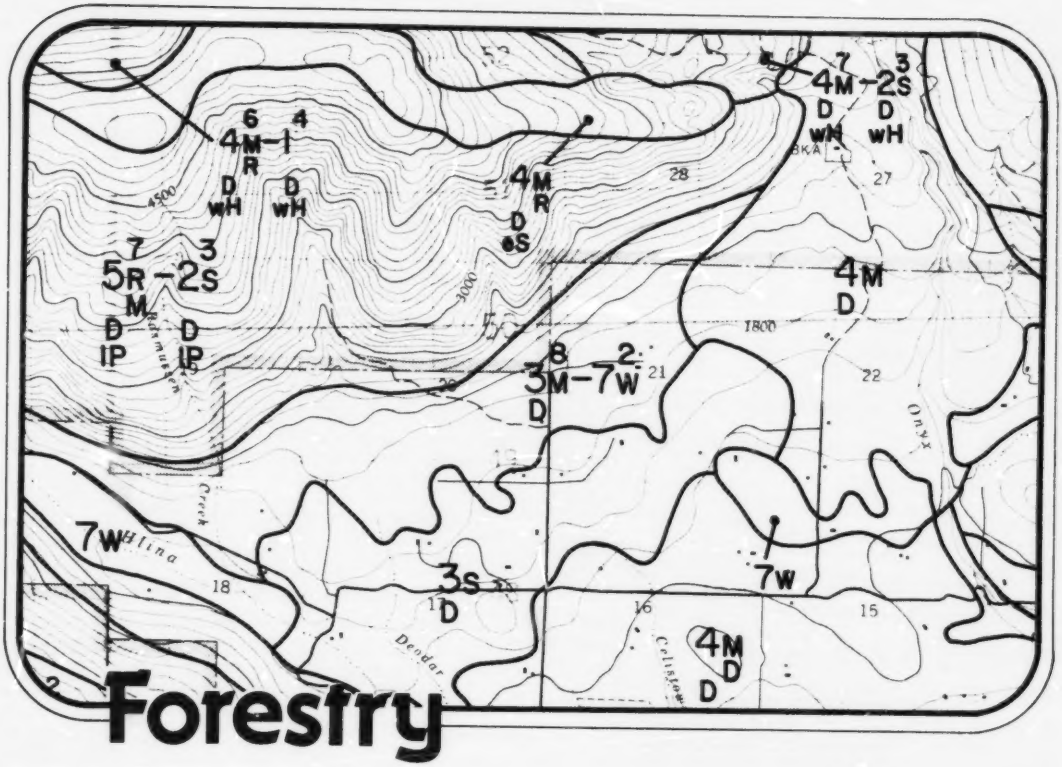


Agriculture

Agriculture capability maps show ratings from Class 1 to Class 7 as well as kinds of limitations, shown by a series of letters following the class number. The rating system is based upon the inherent ability of the land to grow a range of agricultural crops and the level of conservation practices required for good management. Class 1 to 4 lands are considered capable of sustained use for cultivated field crops. Class 5 and 6 are only capable of perennial forage crops or native grazing, and Class 7 has no capability for agricultural use.

Agricultural capability maps are useful when considering the expansion or preservation of our agricultural resources. They were the basis for designation of Agricultural Land Reserve Plans.

Agriculture capability maps are available for most of the arable portions of the province.

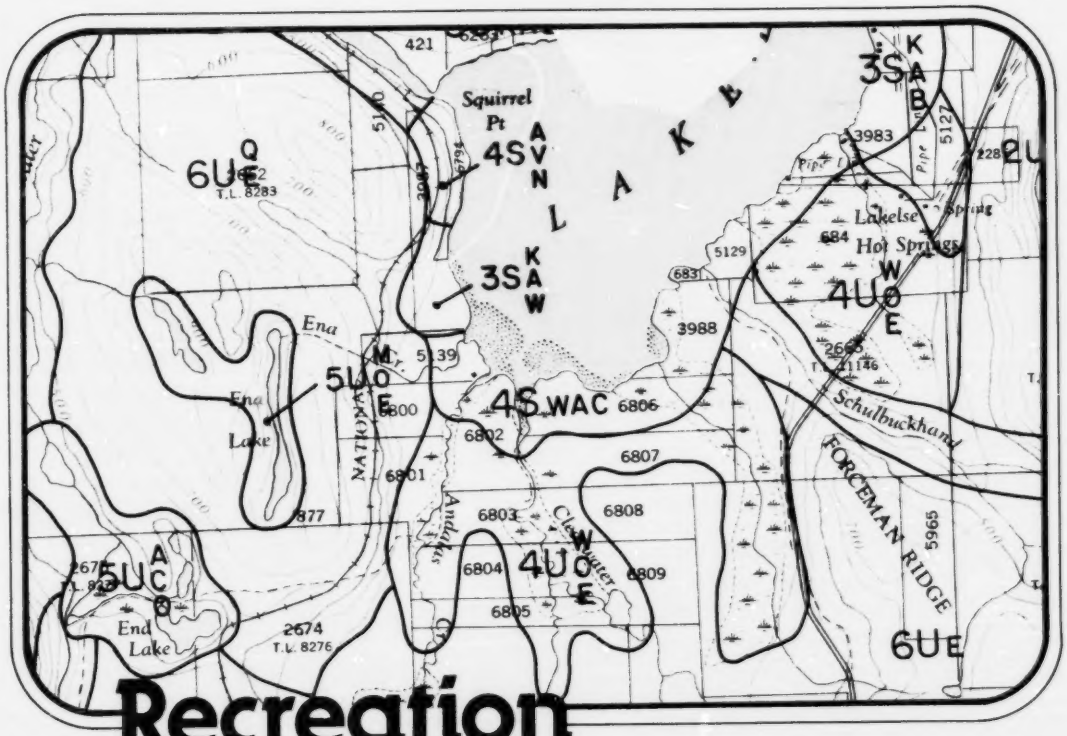


Forestry

Forest capability maps show ratings from Class 1 to Class 7 as well as kinds of limitations shown by a series of letters following the class number. Also shown as subscripts are the tree species considered in developing the rating. The rating system is based upon the inherent ability of the land to grow commercial timber.

Forest capability maps are used in resource folios to indicate areas that should be considered for retention as forested lands due to their high productivity, and the maps are therefore useful in identifying lands with high potential productivity, and lands which will give the best returns to management inputs.

Forest capability maps are available for much of the province.

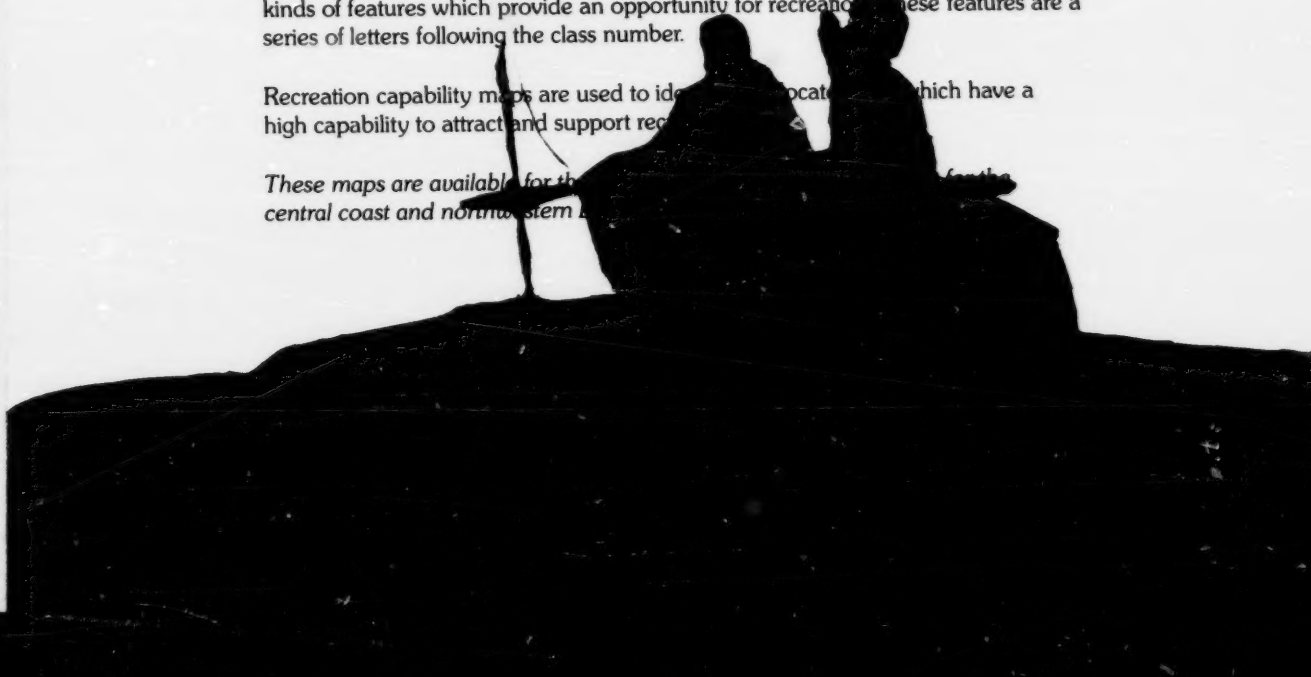


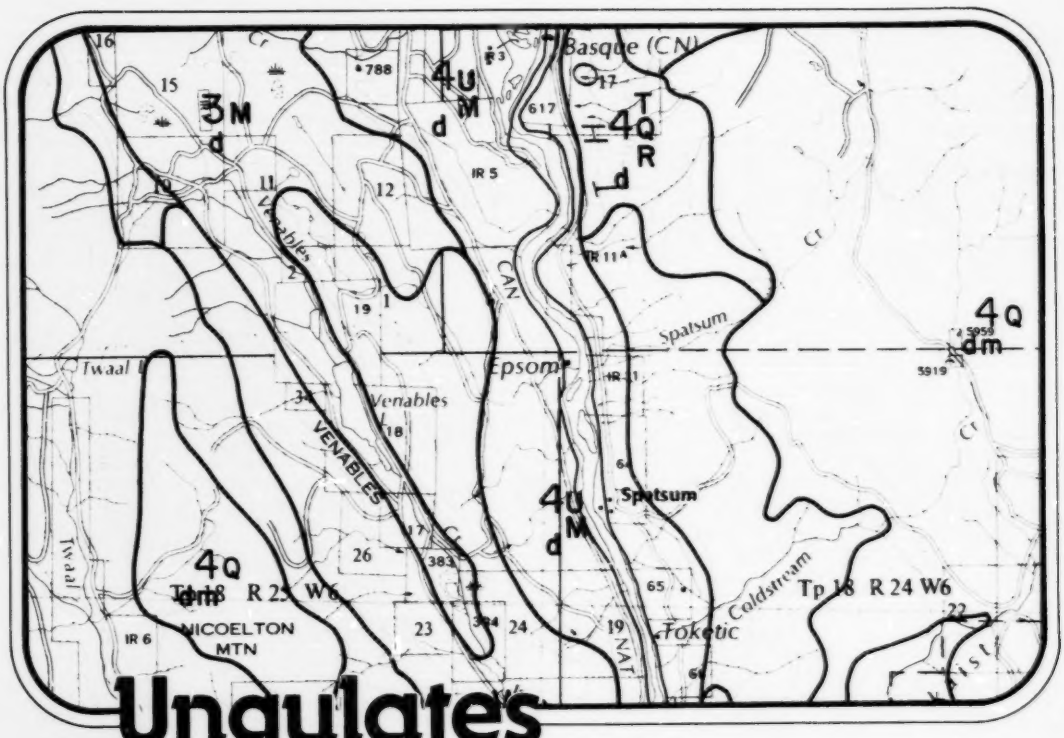
Recreation

Recreation capability maps show ratings from Class 1 to Class 7 as well as the kinds of features which provide an opportunity for recreatio[illegible]ese features are a series of letters following the class number.

Recreation capability m[illegible]s are used to ide[illegible]ocat[illegible]hich have a high capability to attract and support rec[illegible]

These maps are available for th[illegible] for the central coast and northw[illegible]stern [illegible]



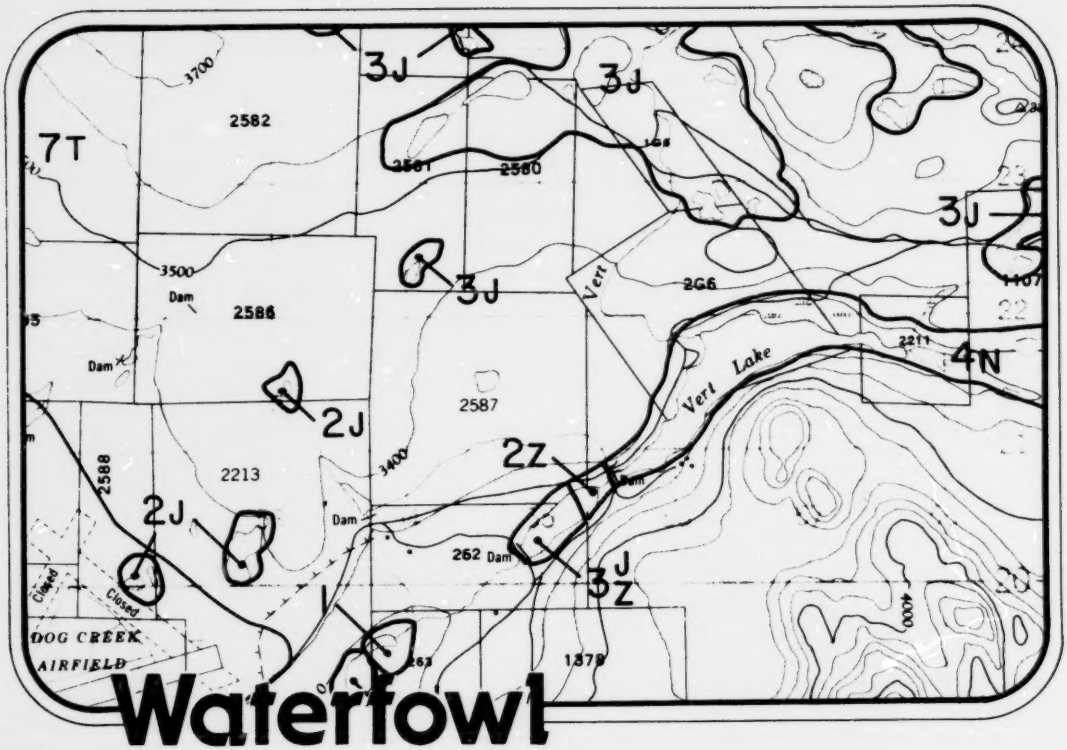


Ungulates

Ungulate capability maps show ratings from Class 1 to Class 7 as well as kinds of limitations shown by a series of letters following the class number. The rating system is based upon the ability of the land to meet the needs of seven ungulate species; these species are shown by a letter below the class number.

Ungulate capability maps identify important winter ranges on which animals from surrounding areas depend. Consideration must be given to protecting these lands to maintain wildlife populations.

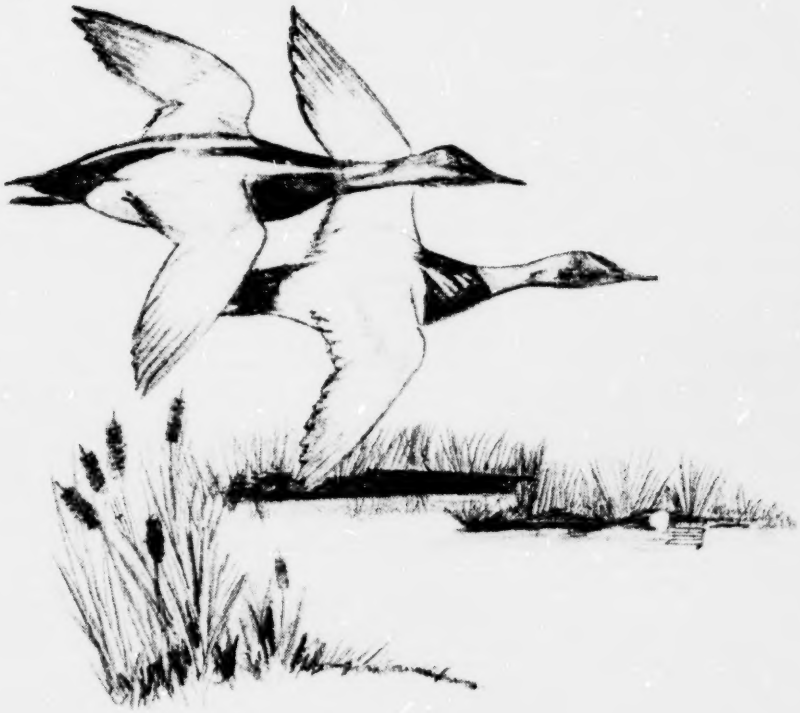
These maps are available for the entire province excluding a section for the central coast and northwestern B.C.



Waterfowl capability maps show ratings from Class 1 to Class 7 as well as kinds of limitations shown by a series of letters following the class number. The ratings are based on the ability of the land and water bodies to support the production of waterfowl.

Waterfowl capability maps indicate critical nesting and migration areas that should be considered for preservation as waterfowl habitat.

These maps are available for the entire province excluding an area for the central coast and northwestern B.C.

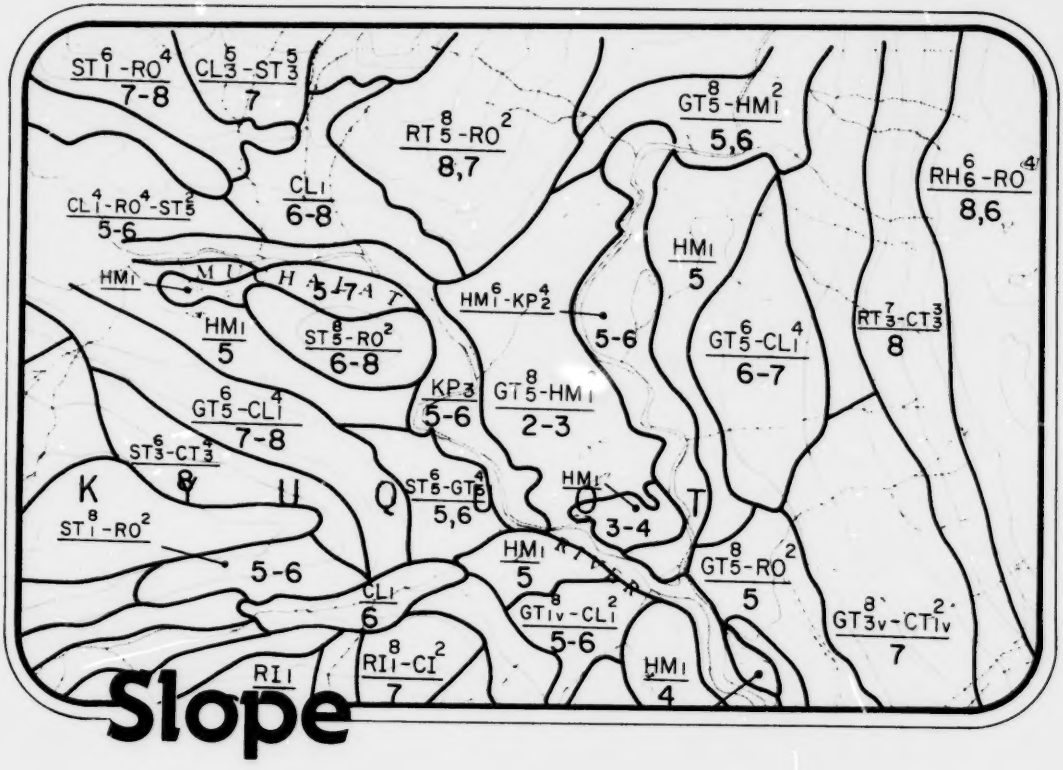


Derivative and Interpretive Maps

For many special projects, the Assessment and Planning Division produces simplified special use maps derived or interpreted from baseline resource inventories.

Derivative maps show features that can be directly extracted from the baseline resource maps. For example, depth to bedrock, soil texture and slope maps can be derived from a soil map.

Interpretive maps result from analyzing data on one or more baseline maps and mapping the conclusions. Interpretive maps generally show high, medium and low ratings for any particular use. Examples of interpretive maps include capabilities, suitabilities and climate moisture deficit.



A slope map can be derived directly from a soil map or prepared from a topographic base map by assessing contour intervals. Most soil maps have slope class symbols in the denominator.

A slope map generally contains symbols (e.g. A to H, or 1 to 10) which indicate the range of slopes found for a given area; occasionally slopes are shown directly on the map. Slope maps are important since developments are generally restricted to gentle slopes, and stability problems are most hazardous on steeper slopes.

Soil Drainage

Soil drainage maps are derived from the baseline soil map. Soils with poor or imperfect drainage can be indicated by shading or colouring the base map. Similarly, soils that are well drained can be identified.

Drainage is important to consider because of its affect on biological productivity and engineering uses of the soils.

Geological Hazards

A geological hazards map shows processes indicated on the baseline terrain map. Active processes such as gullying, snow avalanching, river channelling, and failing can be shown by shading-in those terrain units so affected.

These hazardous areas are important to designate due to their potential effects on developments.

ST1 6 - RO 4
7-8
CL3 5 - ST3 5
7
RT5 8 - RO 2
8,7
GT5 8 - HM1 2
5,6
CL1
6-8
CL1 4 - RO 4 - ST5 2
5-6
HM1
5-7
MUCHALAT
HM1
5
HM1 6 - KP2 4
5-6
HM1
5
ST5 8 - RO 2
6-8
GT5 6 - C
6-7
KP3
5-6
GT5 8 - HM1 2
GT5 6 - CL1 4
ST3 6 - C
K
ST1 8 - RO 2
5-6
GT5 8 - HM
5,6
GT5 6
6
L
M
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MUCHALAT
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K Y U Q U O T
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RIV

Active Floodplains

Interpretive maps portraying active floodplains or flooding hazards are based on soil or terrain maps. Flooding hazard ratings are inferred from genetic materials and soil profile development. Areas subject to frequent or occasional flooding should be designated hazardous and should be avoided for residential developments.

These maps can be prepared in areas where legally-designated floodplains have not been mapped.

Soil Erosion

Soil erosion maps are interpretive maps based on the soil maps. Soil erosion hazard ratings are assessed using soil texture, drainage, depth, and slope as critical determining factors.

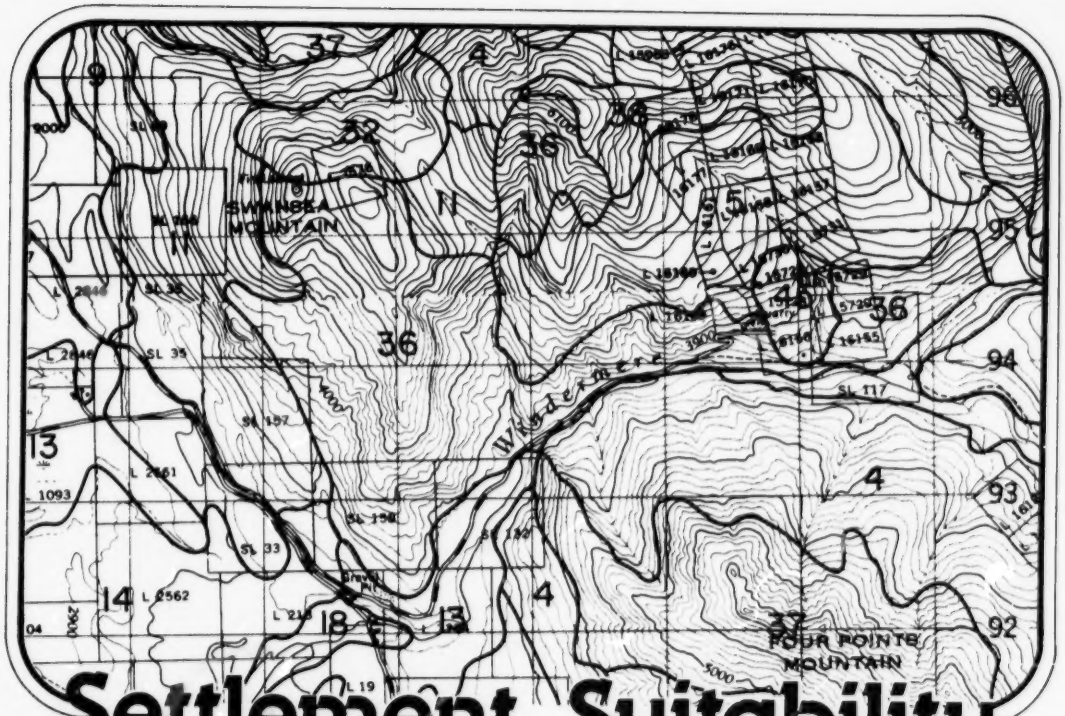
The interpretive map can either shade erosion-prone soil map units or provide high, moderate, or low ratings.

Erosion hazard ratings give a relative idea of the susceptibility of land to erode once the site is disturbed and protective vegetation is removed.

Potential Sources of Sand and Gravel

Suitability ratings for sand and gravel are based on intepreting soil or terrain maps, and subsequently shading these baseline maps. Areas rated as good potential sources of sand and gravel have relatively thick deposits of coarse-textured materials.

The main purpose of the map is to indicate the location and extent of these materials.

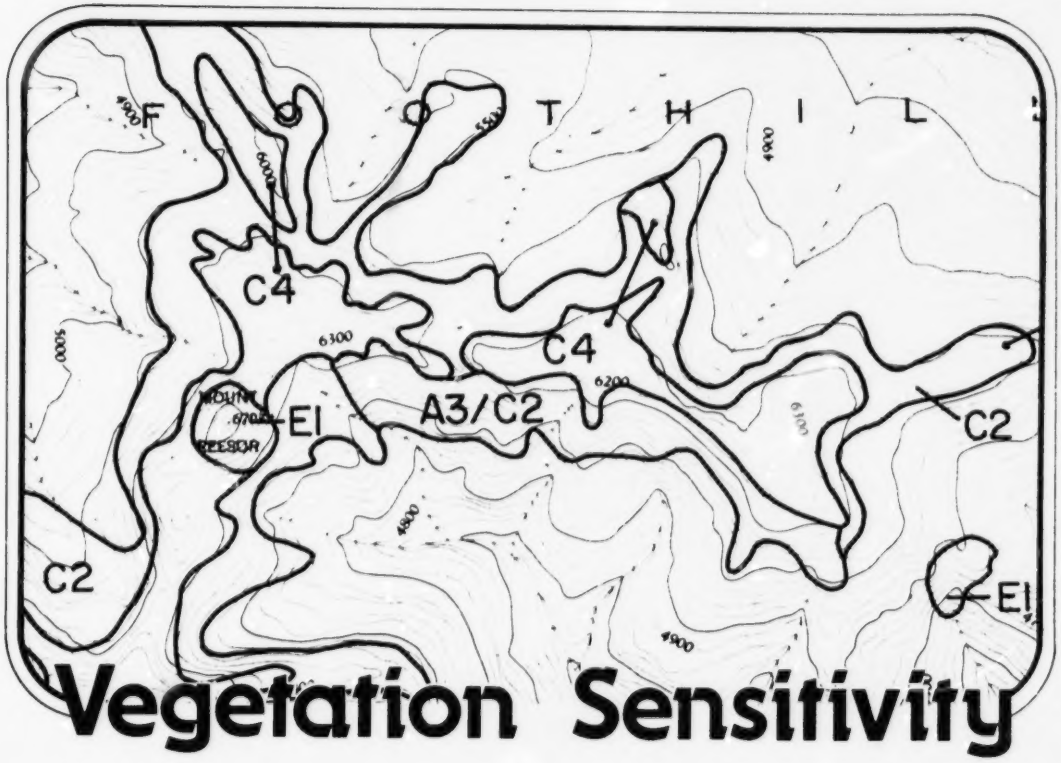


Settlement Suitability

Settlement suitability maps are interpretations based primarily on soil and terrain information. Generally, deep, well drained, medium to coarse textured soils on gentle slopes are physically well suited for residential development. For selected projects, additional baseline resource maps, such as aquatics, are also considered in the overall suitability map.

These maps either show high, moderate or low ratings or identify interpretive map units (e.g. 22, 13, 18) which are rated for settlement purposes on an attached map legend.

Settlement suitability maps are useful to consider so that land subject to environmental hazards such as flooding, or land subject to physical constraints such as poor drainage, are avoided.

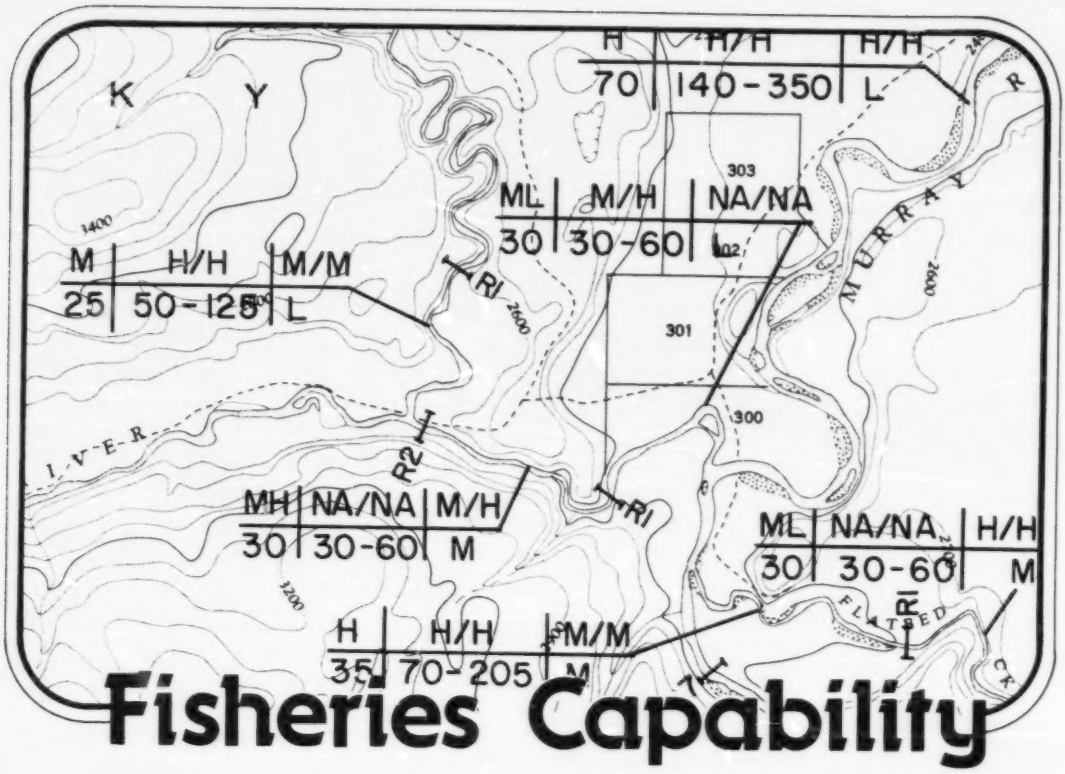


Vegetation Sensitivity

Vegetation Sensitivity maps are a composite of vegetation units that are rated for environmental sensitivity. These maps include two types of sensitivity classes: one where the vegetation unit itself is sensitive (e.g. rare species, revegetation problems), and one where present vegetation indicates some form of site sensitivity (e.g. flooding, high water table, surface erosion).

Vegetation Sensitivity maps are used in resource folios and are directly interpreted from the baseline Vegetation maps.

Vegetation Sensitivity maps are available for small portions of the province. They are generally incorporated in large scale folios.



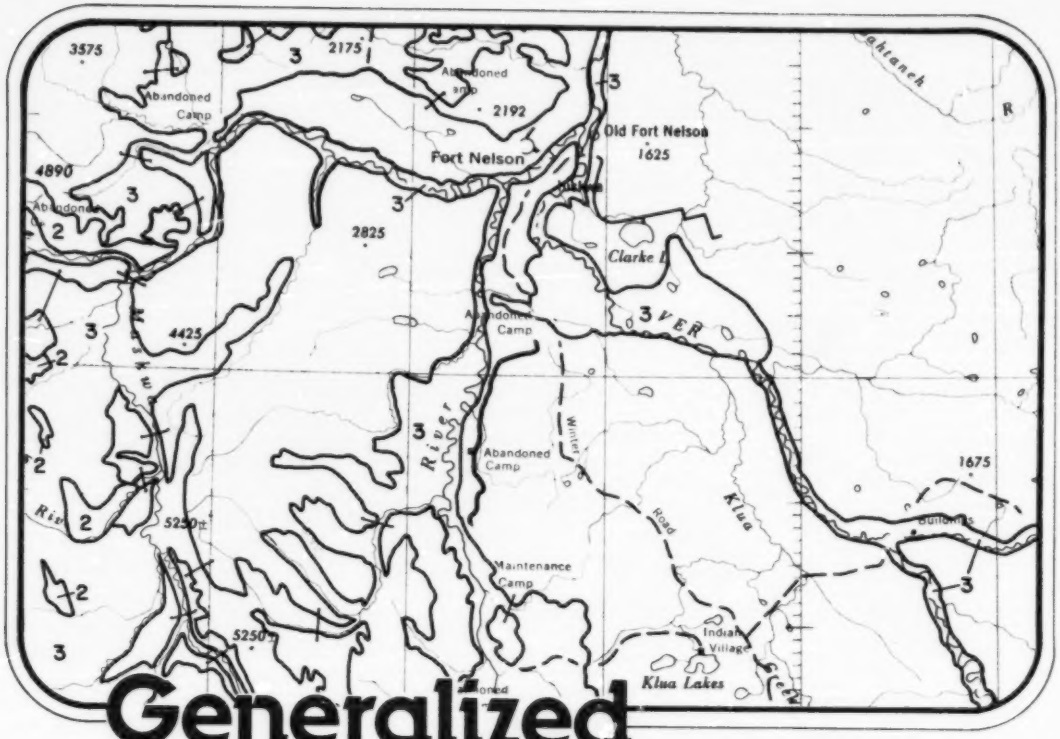
Fisheries Capability

Fisheries capability maps and reports are developed by combining information gathered during aquatic biophysical surveys with knowledge about particular species of fish.

Factors which limit or support the use of a stream reach by particular fish species during the various phases of their life are described.

Fisheries capability assessments are used to identify areas of high value, areas suitable for enhancement, and areas in which more detailed surveys should be carried out.

Fisheries capability assessments are available for some areas in which aquatic biophysical surveys have been done, and may be derived from the Aquatic Data Base for other areas.



Generalized Ungulate Capability

Generalized capability maps for deer, elk, moose, and all ungulate species combined are available at small scales for overview planning purposes. These maps, generalized from the C.L.I. ungulate series, show only three classes of land (moderate to high, high and very high). These classes highlight important winter range areas.

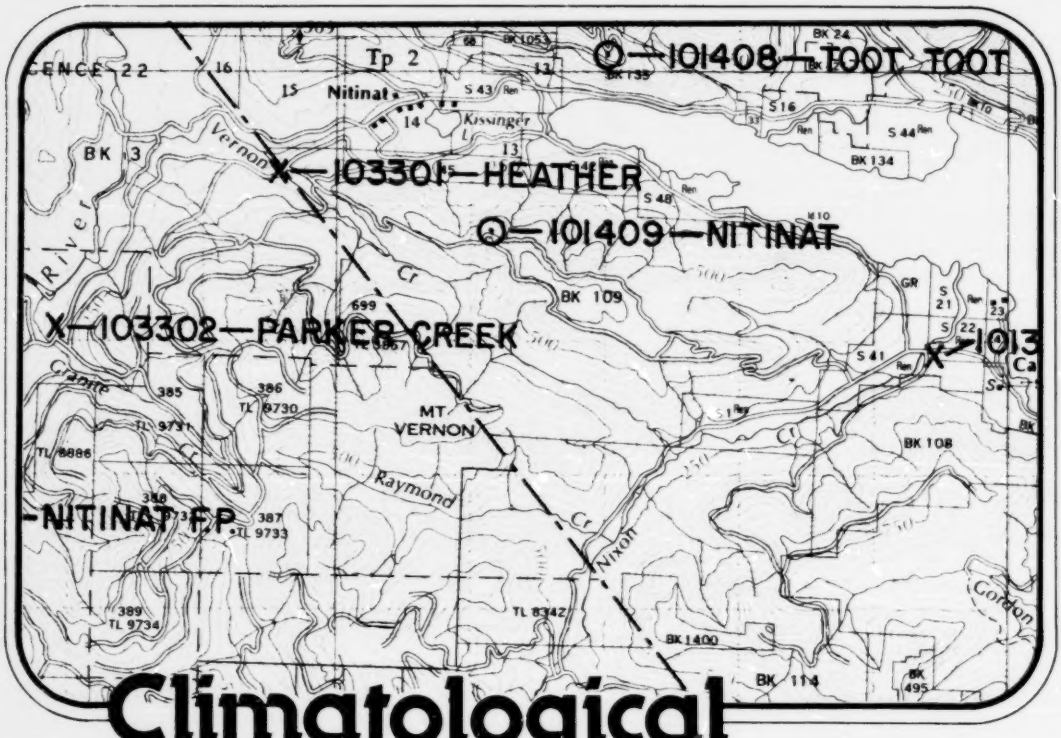
The maps are available for that portion of the province covered under the Canada Land Inventory program.

Climate Maps

Data for all climate maps are compiled and produced by Air Studies Branch. The former Climate Section of the Canada Land Inventory program, produced only May to September Precipitation, Climate Station Network, and Climate Capability for Agriculture maps.

A series of new climate maps are now being produced. They are described on the following nine pages.

In addition to the maps, Air Studies Branch maintains a computerized climate data file. Some of this information is selected for summarization and published on the map legends.



Climatological Station Locations

Climatological Station Location maps show the geographic location of sites where climatological observations have been or are made. At each site the assigned station name and number are documented along with the climatological elements observed.

Climatological Station Location maps are used to determine the sampling density, the exact location of climatological stations, and the type of observations made in any particular region.

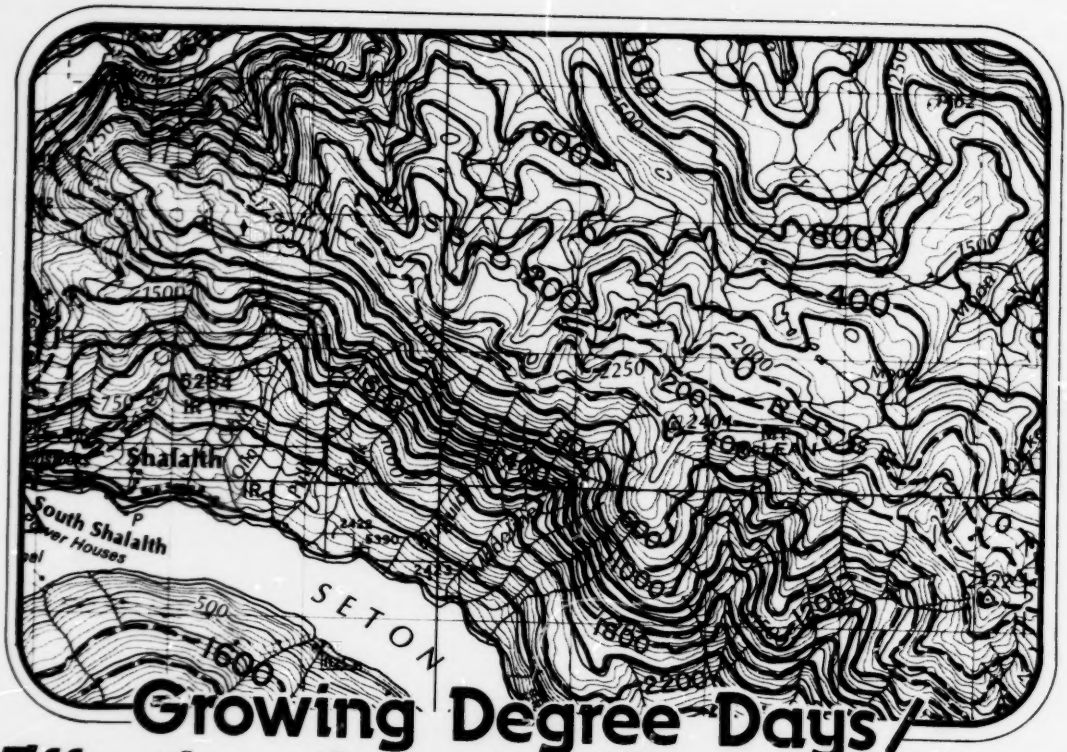
Climatological Station Location maps are available for most of the province with the exception of the central coast and north central regions.

Freeze Free Period

Freeze Free Period maps show isolines of the greatest number of consecutive days free of temperatures of 0°C or less in an average climatic year.

Freeze Free Period maps can assist in the assessment, planning, and development of agriculture and forestry resources of a region or of particular areas within a region.

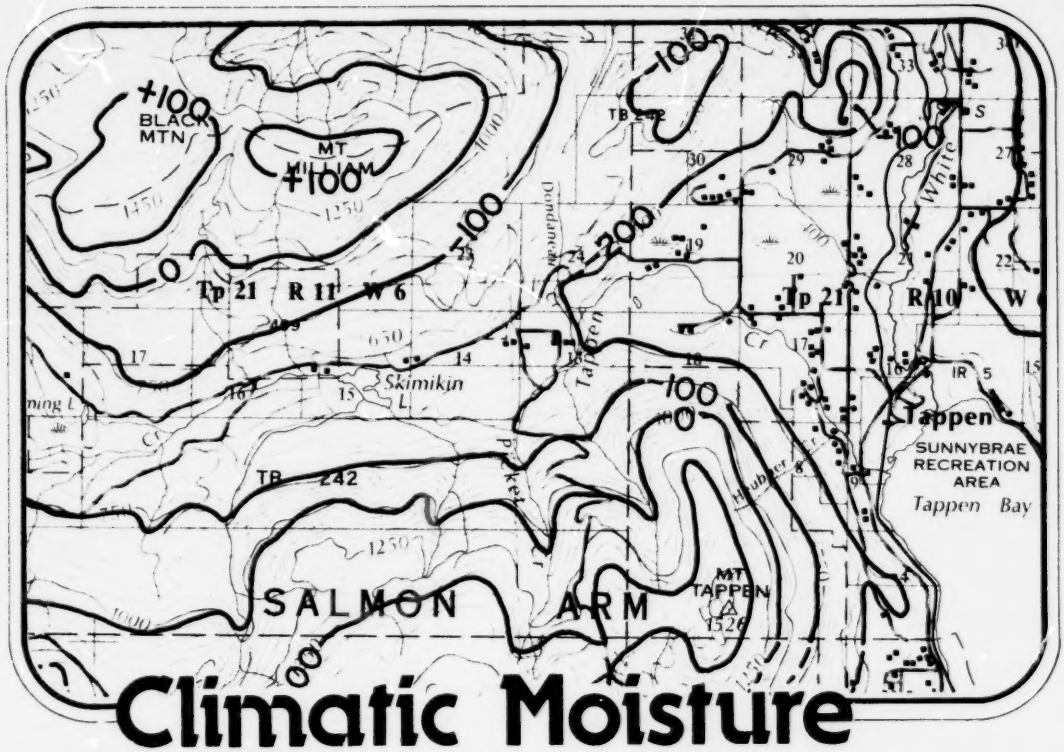
Freeze Free Period maps are available for the Kamloops-Lillooet areas. Preliminary mapping is available for Vancouver Island and the southwest coast.



Growing Degree Days / Effective Growing Degree Days

Growing Degree Days maps show isolines of the average accumulated difference between the mean daily temperature and 5°C over the growing season. Effective Growing Degree Days maps replace Growing Degree Days maps in coastal areas. Effective Growing Degree Days are a product of Growing Degree Days and a Crop Development Index that adjusts for the effect of suboptimal temperatures. These maps can assist in the assessment, planning, and development of agricultural and forest resources of a region or of particular areas within a region.

Growing Degree Days maps are available for the Kamloops-Lillooet areas. Preliminary mapping is available for the McBride-Blue River, Vancouver Island and southwest coast areas.

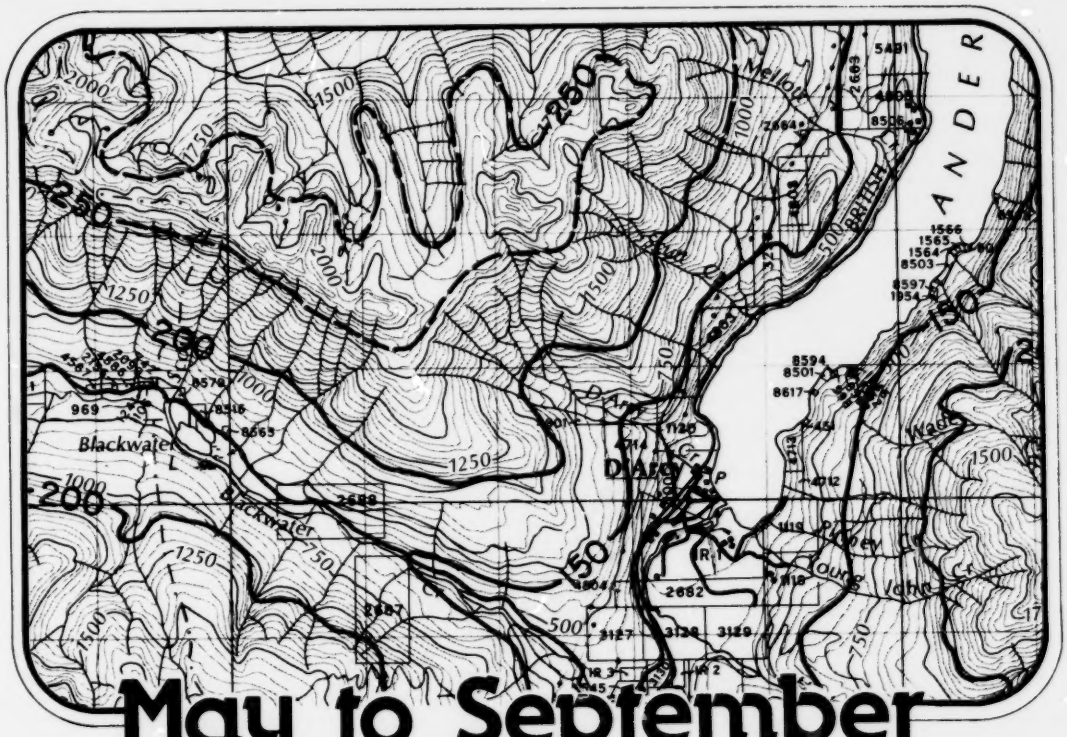


Climatic Moisture Deficit/Surplus

Climatic Moisture Deficit/Surplus maps show isolines of the average difference between the total precipitation and total potential evapotranspiration during the period extending from May 1st to September 30th inclusive.

Climatic Moisture Deficit/Surplus maps can assist in the assessment, planning and development of agricultural and forest resources of a region or particular area within a region.

Climatic Moisture Deficit/Surplus maps are available for some parts of central B.C. Preliminary mapping is available for Vancouver Island and the southwest coast.

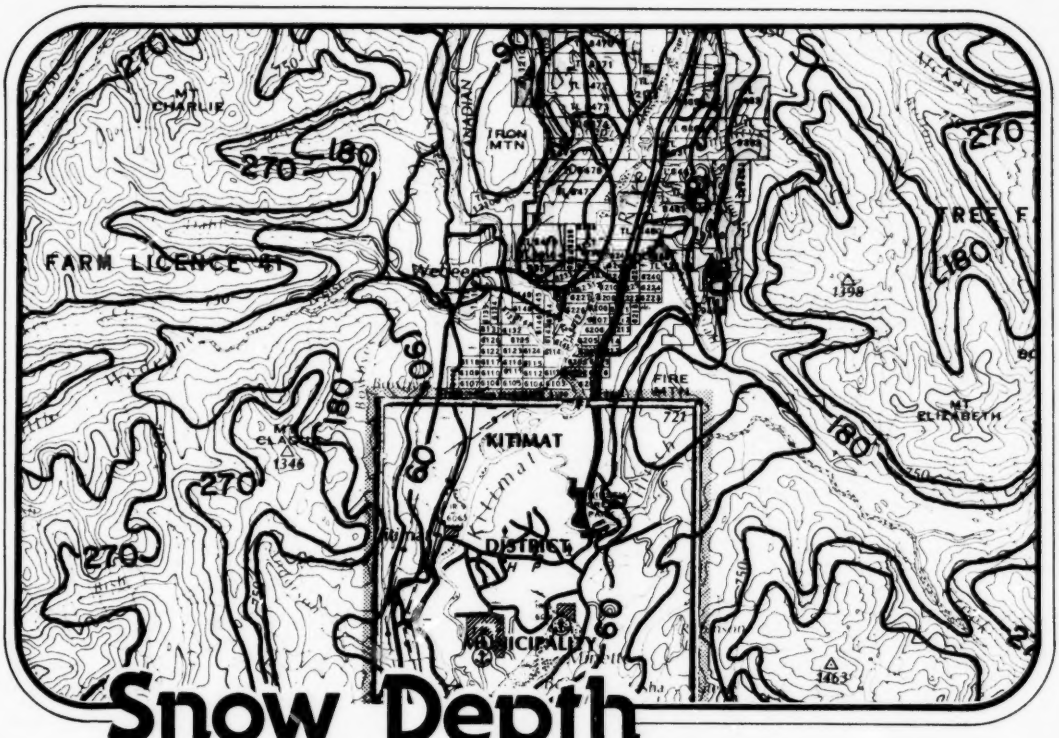


May to September Precipitation

May to September Precipitation maps show isolines of the average amount of precipitation accumulated over the period May 1st to September 30th inclusive.

May to September Precipitation maps help determine the average climatic and soil moisture balances, and provide information for resource planning and management purposes.

May to September Precipitation maps are available for Vancouver Island, the southwest coast and central portions of the province. Preliminary mapping is available for the McBride-Blue River area.

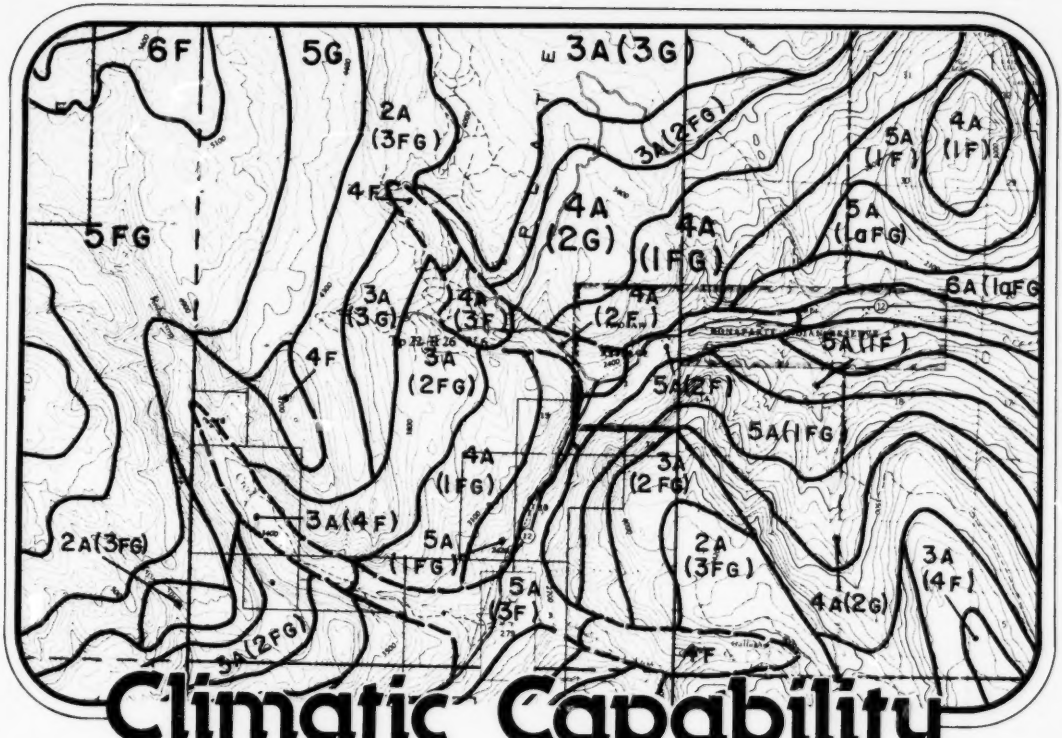


Snow Depth

Snow Depth maps are prepared for three different times of the year; these are December 1st, February 1st and April 1st. Snow Depth maps show the average depth, in centimetres, of snow on the ground for that partiular time period.

Snow Depth maps are used to identify average snow depths for specific areas of a region and can be used in determining whether snow cover in any particular year deviates from the average. This information assists in determining ungulate wintering areas and in designating winter logging areas.

To date, no final Snow Depth maps have been produced. Preliminary mapping is available for select areas of the province.

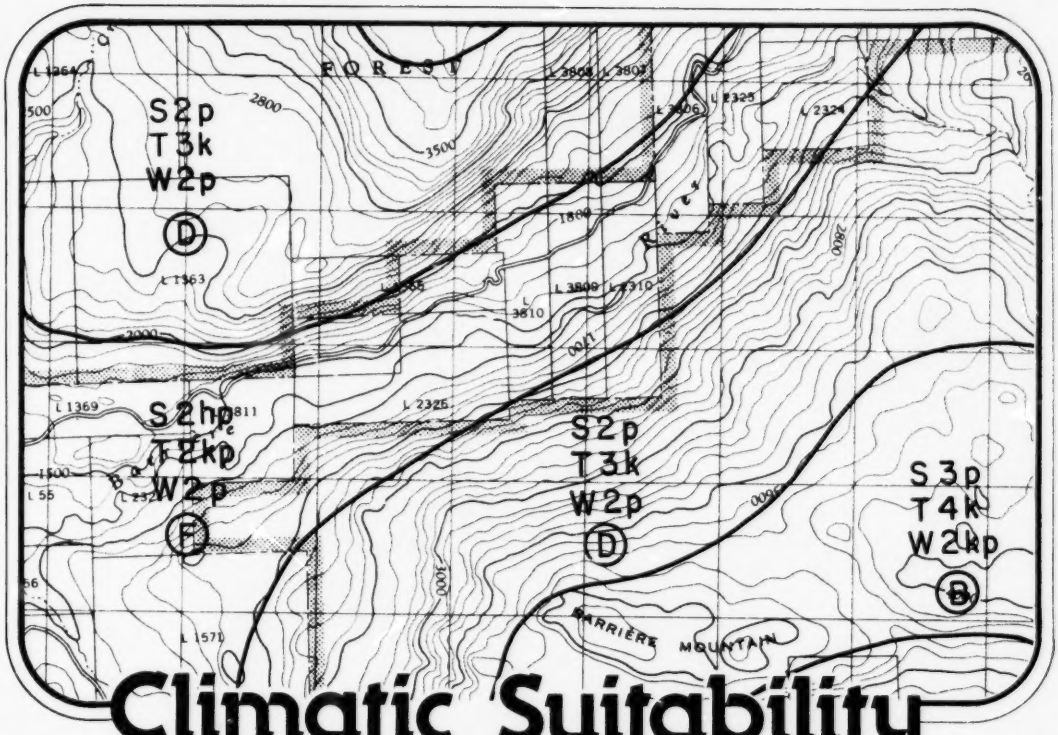


Climatic Capability for Agriculture

Climatic Capability for Agriculture maps use a system of classification which describes the agricultural capability as influenced by climate.

The maps are used in conjunction with soil maps and soil capability for agriculture maps to determine the potential capability of the land to support agriculture.

Climate Capability maps are available for much of the province.

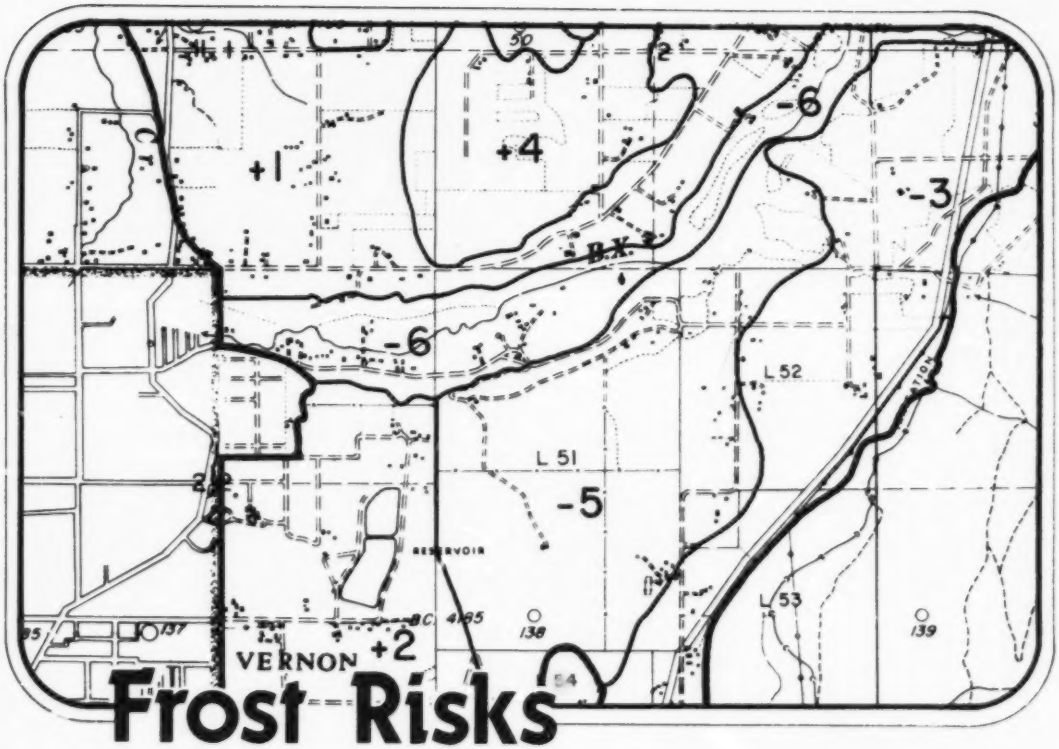


Climatic Suitability for Recreation

Climatic Suitability for Recreation maps show five class ratings based on temperature and precipitation for passive land-based activities in the summer and transition seasons, and for active land-based recreational activities in winter.

Climatic Suitability for Recreation maps are used to determine recreational suitability from a climatic viewpoint.

To date no final Climatic Suitability for Recreation maps have been produced.



Frost Risks

Frost Risk maps show the frequency of occurrence of frosts below 28°F (– 2.22°C) on or after the date of full blossom for the fruit variety being considered.

Frost risk has been mapped for apples, apricots, pears, prunes, cherries and peaches. These maps aid in determining the suitability of areas for the production of these fruits.

Frost Risk maps are available for the Okanagan area.

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